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(19)(CA) **APPLICATION FOR CANADIAN PATENT** (12)

(54) Balanced Neutral Liquid Detergent/Lotion Emulsion Formulation

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ABSTRACT OF THE DISCLOSURE

A balanced, essentially neutral, liquid detergent-lotion emulsion formulation comprising between about 10% and about 30%, preferably about 20%, by weight of total solids and, by weight of total formulation:

detergent or cleansing agent solids in an amount between about 8% and 18%, foam and viscosity booster between about .5% and 1.5%, these components comprising the detergent or cleansing component portion of the formulation,

emollient-moisturizer between about .3% and 3%, emulsifier between about .6% and 3.6%, viscosity adjuster between about .1% and 1%, pH neutralizer, fragrance, and preservative, these components comprising the lotion portion of the formulation,

the percent of lotion solids based upon total weight of the formulation being between about 2% and 11%, preferably about 6% by weight, the preferred percentages of 20% and 6% providing a composition having an at least 40% lotion content on the ICI scale,

and water to make up 100% of the liquid emulsion composition, is disclosed.

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BALANCED NEUTRAL LIQUID DETERGENT/LOTION EMULSION FORMULATION

FIELD OF INVENTION

Extremely mild liquid skin cleansing compositions in emulsion form having a major lotion component.

BACKGROUND OF THE INVENTION

The present invention relates to a liquid extremely mild skin cleanser, and more particularly to such skin cleanser, which is neutral and well-balanced as to its detergent and lotion components, in an emulsion form. Most soaps are alkaline, which is extremely harsh on the skin, but the present formulation is essentially neutral. Many skin cleansing formulations produce excessive foaming, as is also the case with most detergents, especially those without lotion emollients. The present formulation is balanced and therefore does not produce excessive foaming, thereby also permitting rapid rinsing. In addition, many skin cleansing formulations of the prior art induce or cause complete stripping of skin oils, just as is the case with usual detergents, but the composition of the present invention cleanses the skin

surface and crevices without drying out or stripping the skin. Moreover, instead of relatively harsh detergents as commonly employed in prior art preparations, even those regarded as or suggested to be "mild" skin cleansing compositions, the composition of the present invention is of an essentially neutral pH, and employs a mild detergent together with suitable lotion emollients in suitable amounts to attain a desired balance between cleansing effect and emollient effect, thereby producing a highly desirable and extremely advantageous liquid skin cleansing composition which is not harsh to the skin, which does not produce excessive foaming, stripping of skin oils, or drying out of the skin, and which combines the employment of a mild detergent with lotion emollients in a desired balance between cleansing and emollient effects, thereby assuring effective and rapid cleansing of skin surfaces without drying or stripping and leaving them with an extremely soft and pleasant "feel".

PRIOR ART

The prior art is well summarized in U.S. Patent 4,673,525, issued June 16, 1987, but neither the disclosure of this U.S. Patent nor any of the prior art cited therein or thereagainst, or otherwise known to this inventor, shows or suggests any balanced neutral liquid detergent/lotion emulsion formulation of the present invention, nor the particular requirements and components for the production thereof, nor the highly advantageous results which are effected upon use thereof.

OBJECTS OF THE INVENTION

It is an object of the present invention to produce a more satisfactory liquid mild skin cleansing composition which embodies cleansing effect and emollient effect and produces superior and advantageous results with respect to adequate and rapid cleansing without excessive foaming, thereby permitting rapid rinsing, which cleanses without drying or stripping of skin oil, and which embodies lotion emollients in high degree, thereby effecting a desired balance between cleansing effect and emollient effect and leaving the skin with a comfortable, pleasant, soft and highly-acceptable skin "feel" upon use. Another object of the invention is to provide such formulation containing a specified pH which is essentially neutral, which is essentially in emulsion form, and which comprises a certain range of lotion ingredients to cleansing ingredients based upon solids content of the formulation, which is necessary for attaining the highly desirable characteristics of the composition of the present invention upon use thereof.

Other objects of the invention will be apparent to one skilled in the art and still other objects of the invention will become apparent hereinafter from the more detailed description which follows.

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SUMMARY OF THE INVENTION

The invention, then, comprises the following aspects, inter alia:

a balanced, essentially neutral, liquid detergent-lotion emulsion formulation comprising between about 10% and about 30% by weight of total solids, and consisting essentially of, by weight of total formulation:

detergent or cleansing agent solids comprising an alkali metal sulfate and at least one cocamide salt in an amount between about 8% and 18%; foam and viscosity booster comprising sodium chloride between about .5% and 1.5%; these components comprising the detergent or cleansing component portion of the formulation,

emollient-moisturizer comprising petroleum jelly, a cellulose ether, and an alkylhydroxy fatty acid ester between about .3% and 3%; emulsifier comprising an acrylic copolymer, a fatty acid glyceride, and a polyoxyethylene fatty acid between about .6% and 3.6%; viscosity adjuster comprising a pyrrolidone between about .1% and 1%; pH adjuster to pH about 7; fragrance, and preservative, these components comprising the lotion portion of the formulation,

the percent of lotion solids based upon total weight of the formulation being between about 2% and 11% by weight,

and deionized or distilled water to make up 100% of the liquid emulsion composition; such a

composition wherein the percentage by weight of lotion solids based upon total weight is about 6%; and such a

composition wherein the percentage by weight of lotion solids based upon total weight is about 6% and the total solids content of the formulation is about 20%, the composition being above 40% lotion on the ICI scale.

Moreover, a balanced, essentially neutral, liquid detergent-lotion emulsion formulation comprising between about 10% and about 30% by weight of total solids, and consisting essentially of, by weight of total formulation:

detergent or cleansing agent comprising sodium laureth sulfate, cocamido propyl betaine and cocamide DEA in an amount between about 8% and 18%; foam and viscosity booster comprising sodium chloride between about .5% and 1.5%; these components comprising the

detergent or cleansing component solids portion of the formulation,

emollient-moisturizer comprising petroleum jelly, polyquaternium 10, and octyl hydroxystearate between about .3% and 3%; emulsifier comprising a carboxyvinyl copolymer and glyceryl stearate-PEG-100 between about .6% and 3.6%; viscosity adjuster comprising lauryl pyrrolidone between about .1% and 1%; pH adjuster comprising triethanolamine to pH about 7; fragrance, and preservative, these components comprising the lotion solids portion of the formulation,

the percent of lotion solids based upon total weight of the formulation being between about 2% and 11%,

and deionized or distilled water to make up 100% of the liquid emulsion composition; such a

composition wherein the percentage by weight of lotion solids based upon total weight is about 6%; and such a

composition wherein the percentage by weight of lotion solids based upon total weight is about 6% and the total solids content of the formulation is about 20%, the composition being above 40% lotion on the ICI scale.

DETAILED DESCRIPTION OF THE INVENTION

The following Preparations and Examples are given to illustrate the compositions of the present invention, but are not to be construed as limiting.

PREPARATION 1 - 5% w/w Polymer JR 400 Dispersion

In a two-liter beaker: To 700 grams of deionized water with high-speed mixing add 50 grams JR 400. This results in a thin dispersion with JR 400 settling out

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on standing. Add 250 grams of hot water at 70°C while mixing. Allow to cool to 35°C. Almost instantly the dispersion thickens and almost gels, but clears to a straw-colored very viscous mass upon slight agitation.

The pH is found to be 5.1.

PREPARATION 2 - 1% w/w Carbopol™ 1342 Dispersion

In a two-liter beaker: To 700 grams of deionized water with high-speed mixing add 10 grams Carbopol™ 1342 which thickens. Then add 290 grams of water at 65°C. The mixture becomes a moderately-viscous aerated dispersion upon further stirring. The product is strained through four (4) layers of cheesecloth, whereafter no lumps or undispersed particles are noted.

The pH is found to be about 3.2.

PREPARATION 3 - 1% w/w Carbopol™ 1342 Dispersion (alternative)

In a two-liter beaker, mix:

Carbopol™ 1342	-	14 grams
Deionized Water	-	1386 grams
		1400 grams

Use Arde-Barinco™ Mixer - 1% w/w appears to disperse well without evidence of lumps. As an extra precaution, the dispersion is strained through six (6) layers of gauze. The product is very aerated.

The pH is found to be 3.2.

EXAMPLE 1: LIQUID SOAP FORMULATION INCORPORATING MAJOR LOTION COMPONENT

Using a two-liter beaker, weigh in 600 grams of a 1% weight/weight dispersion of Carbopol™ 1342 in deionized water. (This is prepared separately as a 1.4 kgm size batch with the use of an Arde-Barinco™ Mixer which provides the appropriate shear to produce a

uniform dispersion quickly.) Weigh in 27.75 grams of deionized or distilled water.

Introduce a prop-type mixer into the above and, while mixing (note that mixture is slightly viscous and slightly opalescent), add 37.5 milliliters of a 20% weight/weight aqueous solution of sodium chloride. (This causes some thinning of the mixture.) Add 10.5 milliliters of a 50% weight/weight aqueous solution of triethanolamine. (Some thickening is noted.)

Continue to add while mixing: 450 grams of Standapol™ ES-3, 90 grams of Velvatex™ BK-35, 30 grams of Standamid™ SD, and 150 grams of a 5% weight/weight aqueous dispersion of Polymer JR-400™. The mixture is now moderately viscous, opalescent and aerated. The mixture is set aside overnight, resulting in loss of entrapped air. The next day, the mixture is heated to 75 degrees centigrade while mixing.

In the interim, a mixture of 7.5 grams of petrolatum, 7.5 grams of Wickenol™ 171, and 30 grams of Arlacel 165 in a 100-milliliter beaker is also heated to 75 degrees centigrade and then added to the above, followed by 7.5 milliliters of 50% w/w aqueous triethanolamine or, alternatively, 7.5 milliliters of a combination of Mazeen C-15 (PEG (15) cocoamine (CTFA nomenclature), from MAZER™ Chemicals) and 50% weight/weight triethanolamine (TEA) in a 1:2 ratio. This results in a slightly milky appearance due to the emulsion of lotion ingredients.

The mixture is then cooled to 25 degrees centigrade in a water/ice bath while mixing, resulting in a slightly viscous, milky liquid.

Now add the following while mixing:

0.75 gram of Dowicil™ 200,

6.0 grams of Perfume #34318 - Cologne-type fragrance

37.5 milliliters of 20% w/w sodium chloride
7.5 milliliters of Surfadone™ LP-300

This results in a very viscous, milky product. The pH of the product is controlled by triethanolamine. The viscosity of the product is controlled by sodium chloride and Surfadone LP-300.

This formulation contains "47.5% Lotion" based upon the fact that the lotion ingredients constitute 6.09% of the total solids in the formula. This calculation or extrapolation is based upon a review of ICI United States Hand Products Formulary where Formula HP-9, a 100% lotion, has 12.8% solids. The lotion ingredients in the present formulation actually constitute 30% of the total solids (6.09 compared to 19.68 or 20% total solids).

The pH of the formulation is about 6.7 and the reading on a Brookfield™ Viscosometer using a No. 3 spindle at an RPM of 0.6 is 5.3.

In actual use, this product is found to be extremely effective as a skin cleanser, without excessive foaming and permitting rapid rinsing, and to be extremely mild even upon sensitive skin, without stripping of skin oils or excessive drying of the skin, and to leave the skin of the user with a pleasant, comfortable, soft and highly-acceptable skin "feel".

EXAMPLE 2 - OTHER FORMULATIONS

Further examples of formulations according to the invention, along with their ranges of percentage of total solids content, preferred percentage of total solids content, ingredients, and identification or characterization of ingredients, are to be found in TABLE I.

TABLE I

Ingredient		Approximate Ranges of % of Solids and Approximate Preferred % of Solids (% by weight to total weight)				Identification or Characterization
		MIN	PFDxx	MAX		
*1)	Carbopol 1342	.2	.4	.6		Emulsifier
*2)	Arlacel 165	.4	2.	3.	3.6	Emulsifier
3)	NaCl	.5	1.	1.5	(adequate)	Viscosity Adjuster or Booster
*4)	TEA	.75	1.29	1.65	(adequate to pH ca 7)	pH Neutralizer
5)	Standapol ES 3 (ca. 30% solids)	5.7	8.55	11.4		Cleanser
		8.56			17.1	
6)	Velvetex BK 35	(ca 8) 1.36	2.04	2.7	(ca 18)	Cleanser
7)	Standamid SD	1.5	2.	3.		Cleanser
*8)	JR 400	.1	.5	1.		Emollient - Moisturizer
*9)	Wickenol 171	.3 .1	.5	1.	3	Emollient - Moisturizer
*10)	PJ (Petroleum Jelly)	.1	.5	1.		Emollient - Moisturizer
*11)	Dowicil 200	.05	.05	.2	(adequate)	Preservative
*12)	Essential Oil or Fragrance (34318)	.1	.4	1.	(adequate)	Fragrance
*13)	Surfadone LP-300	.1	.45	1.		Viscosity Adjuster
		10.96	19.68	29.05		
		(ca 10)	(ca 20)	(ca 30)		
14)	Water (H_2O)	qs to 100% total weight of formulation				

xx pH = ca 7
Viscosimeter reading = 5.3

*Lotion ingredients for Calculation = 47.5% Lotion (on the ICI Scale)

%Lotion Solids to total weight = ca 2(1.9) to ca 11(10.45), preferably ca 6(6.09)

The formulations of TABLE I have the same advantageous and desirable characteristics in practical use as those described at the end of Example 1, with those containing approximately the preferred percentages of solids content being most outstanding and hence "preferred".

EXAMPLE 3 - FURTHER FORMULATIONS

The following TABLE II gives a further list of representative ingredients employed along with their trade or common names, their chemical name, their CTFA name (Cosmetic, Toiletry, and Fragrance Association; usually as per label), and their supplier.

TABLE II

LIQUID SOAP FORMULATION EMBODYING MAJOR LOTION COMPONENT

LIST OF INGREDIENTS EMPLOYED

TRADE/COMMON NAME	CTFA NAME (Label)	SUPPLIER
Water	Water	
Standapol ES-3 (Sodium Lauryl Ether Sulfate)	Sodium Laureth Sulfate	Henkel
Velvetex BK-35 (Cocamido Propyl Betaine)	Cocamido Propyl Betaine	Henkel
Arlacel 165 (50% Polyoxyethylene stearic acid 50% Mono- and diglycerides of fatty acids)	Glyceryl Stearate-PEG 100	ICI USA
Standamid SD (Cocamide Diethylamine)	Cocamide DEA	Henkel
Sodium Chloride	Sodium Chloride	
Triethanolamine, 99%	Triethanolamine	
Snow Petrolatum	Petrolatum	Penreco
Wickenol 171 (2-Ethylhexyl 12-hydroxystearate)	Octyl Hydroxystearate	CasChem
Ucare Polymer JR 400 (Cellulose, ω-ether with α-[2-hydroxy-3-(trimethylammonio) propyl]- ω-hydroxy poly(oxy-1,2-ethanediyl)chloride)	Polyquaternium 10	Amerchol
Surfadone LP 300 (N-(n-Dodecyl)pyrrolidone)	Lauryl Pyrrolidone	GAF
Carbopol 1342 (Acrylic copolymers; Carboxy polymethylene)	Carboxy Vinyl Copolymer	Goodrich
Perfume #34318	Fragrance (Cologne-type)	Carrubba
Dowicil 200 (Cis isomer of 1-(3-chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride)	Quaternium 15	Dow

The suppliers of the active ingredients of the compositions of the invention along with the tradenames for the ingredients and the CTFA (Cosmetic, Toiletry, and Fragrance Association) names for the ingredients are set forth in the foregoing tabulation, it being understood that substitution of other functionally equivalent emulsifiers, cleansers, moisturizer-emollients, viscosity adjusters, pH neutralizers, preservatives, and fragrances may be made wherever necessary or desirable, so long as the excellent and desirable characteristics of the balanced neutral liquid detergent-lotion emulsion formulations of the present invention are not essentially changed by the substitution.

Reference is made to U.S. Patent 4,673,525, for a disclosure of some moisturizer-emollients which may be substituted in the composition of the present invention as well as for other non-soap cleansers or surfactants, polymers or otherwise, which may be substituted for one or more of the mild detergents or cleansers used in the foregoing, as well as other optional ingredients which may or may not be included in the composition of the present invention depending upon the objectives of the formulator. As other detergents or cleansers which may be incorporated into the compositions of the invention may be mentioned one or more of the CTFA-identified products TEA lauryl sulfate, lauroamphocarboxyglycinate, sodium myreth sulfate, lauramidopropyl betaine, and lauramide DEA. As a further emulsifier which may also be employed may be mentioned glyceryl stearate SE. As moisturizer-emollient may also be employed Naturechem OHS (octyl hydroxystearate), PPG-10 methyl glucose ether (Glucam P-10 from Amerchol), polypropylene glycol, other polyglycols, glycerine, and sorbitol, as

well as other moisturizer-humectants or emollients based upon these fundamental units. The polyethylene glycols are clear, viscous, liquids at room temperature and Polyglycols 200, 300, 400, or 600 may be employed, although Polyglycol 400 is definitely preferred. Moreover, as additional viscosity stabilizers which may be employed instead of or in addition to the sodium chloride or Surfadone LP-300 may be mentioned methocel and other cellulose derivatives, to name a few. In place of or in combination with the pH adjuster of the present invention, triethanolamine, as neutralizers Mazeen C-15 and other tertiary amines and the like or an inorganic base such as sodium hydroxide may be employed. As another emollient-moisturizer may also be employed Quaternium 22, a gluconamidopropyl dimethyl-2-hydroxyethyl ammonium chloride product available from Van Dyk under the name Ceraphyl 60. In place of or in addition to the preservative Quaternium-15, methyl and/or propyl parahydroxybenzoates may be illustratively employed. Other fragrances may be substituted as desired, depending only upon the fragrance objectives of the formulator. As far as the triethanolamine, it is normally provided in liquid aqueous form and, as employed in the examples hereof was of a 99% concentration, although other aqueous forms of triethanolamine are available having lower concentrations, and such other triethanolamine aqueous solutions, as well as other tertiary amine and similar neutralizers, may be employed in place of the triethanolamine with equal facility.

It is accordingly seen from the foregoing that the present invention provides a highly desirable and advantageous balanced essentially neutral liquid detergent or cleansing and lotion emulsion formulation which contains an extremely high proportion of lotion

to cleansing agent based upon total solid content, which does not cause excessive foaming, which permits rapid rinsing, which cleanses without drying and does not cause stripping of skin oils, and which moreover incorporates or embodies sufficient lotion emollients to provide a desired balance between cleansing effect and emollient effect and to leave the skin surface, upon employment of the product of the present invention in the usual manner for cleansing thereof, efficiently clean, but yet soft and with a pleasant and totally acceptable skin "feel" which is a clean, refreshed, and unusually smooth and moisturized "feel", especially when compared with usual prior art detergents or skin cleansers.

It is to be understood that the present invention is not to be limited to the exact compounds, compositions, procedures, or formulations disclosed, as numerous modifications and changes therein will immediately become apparent to one skilled in the art to which this invention pertains, wherefore the scope of the invention is to be understood as limited only by the full scope which can be legally accorded to the appended claims.

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THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

-1-

A balanced, essentially neutral, liquid detergent-lotion emulsion formulation comprising between about 10% and about 30% by weight of total solids, and consisting essentially of, by weight of total formulation:

detergent or cleansing agent solids comprising an alkali metal sulfate and at least one cocamide salt in an amount between about 8% and 18%; foam and viscosity booster comprising sodium chloride between about .5% and 1.5%; these components comprising the detergent or cleansing component portion of the formulation,

emollient-moisturizer comprising petroleum jelly, a cellulose ether, and an alkylhydroxy fatty acid ester between about .3% and 3%; emulsifier comprising an acrylic copolymer, a fatty acid glyceride, and a polyoxyethylene fatty acid between about .6% and 3.6%; viscosity adjuster comprising a pyrrolidone between about .1% and 1%; pH adjuster to pH about 7; fragrance, and preservative, these components comprising the lotion portion of the formulation,

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the percent of lotion solids based upon total weight of the formulation being between about 2% and 11% by weight,

and deionized or distilled water to make up 100% of the liquid emulsion composition.

-2-

Composition of Claim 1 wherein the percentage by weight of lotion solids based upon total weight is about 6%.

-3-

Composition of Claim 1 wherein the percentage by weight of lotion solids based upon total weight is about 6% and the total solids content of the formulation is about 20%, the composition being at least 40% lotion on the ICI scale.

-4-

A balanced, essentially neutral, liquid detergent-lotion emulsion formulation comprising between about 10% and about 30% by weight of total solids, and consisting essentially of, by weight of total formulation:

detergent or cleansing agent solids comprising sodium laureth sulfate, cocamido propyl betaine and cocamide DEA in an amount between about 8% and 18%; foam and viscosity booster comprising sodium chloride between about .5% and 1.5%; these components comprising the detergent or cleansing component solids portion of the formulation,

emollient-moisturizer comprising petroleum jelly, polyquaternium 10, and octyl hydroxystearate between about .3% and 3%;

emulsifier comprising a carboxyvinyl copolymer and glyceryl stearate-PEG-100 between about .6% and 3.6%; viscosity adjuster comprising lauryl pyrrolidone between about .1% and 1%; pH adjuster comprising triethanolamine between about .75% and 1.65%; fragrance, and preservative, these components comprising the lotion solids portion of the formulation,

the percent of lotion solids based upon total weight of the formulation being between about 2% and 11% by weight,

and deionized or distilled water to make up 100% of the liquid emulsion composition.

-5-

Composition of Claim 4 wherein the percentage by weight of lotion solids based upon total weight is about 6%.

-6-

Composition of Claim 4 wherein the percentage by weight of lotion solids based upon total weight is about 6% and the total solids content of the formulation is about 20%, the composition at least 40% lotion on the ICI scale.

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Composition of any of Claims 1, 2, 3, 4, 5, or 6, wherein the percentage by weight of lotion solids to total solids is about 30%. R26